OCT-80 NOV-80 VOL III NO I

AUSTRALIAN UNIX USERS GROUP NEWSLETTER

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Editors Rave

Welcome all you readers out there in subscriber land, to volume three of AUUGN. Unlike some similar publications which have dropped out of sight, AUUGN continues to bring to its readers a flood of stunningly interesting information.

Well maybe. But anyway here goes volume three.

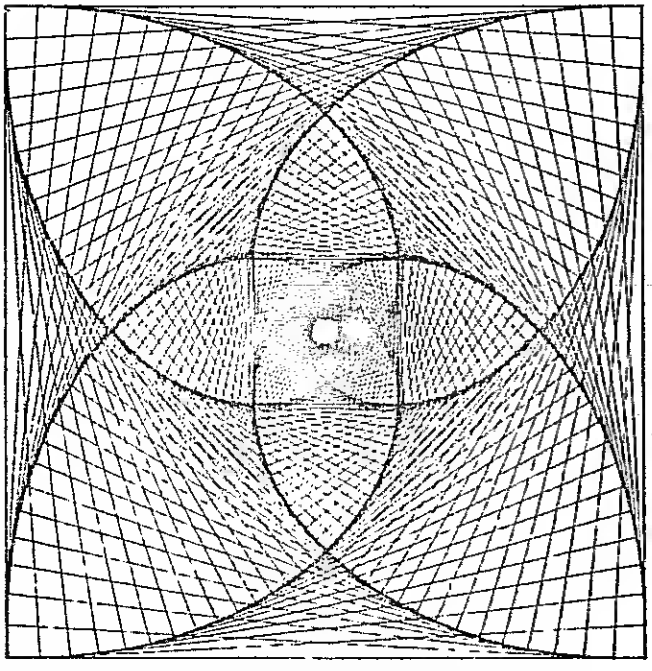
In this issue

Being the last issue to appear before Christmas 1980, I have included Dave Hunt's summary of the talk he gave at the Melbourne conference on solving the 'Hungarian Cube'. Should you receive one of these puzzles for Chrissie then David's paper is a must.

The bulk of the rest of the issue consists of mail, the 1981 mailing list (so far), the January 1981 US meeting announcement and a few pages from the Canadian Newsletter.

As yet I have not seen an official summary of the last US meeting. So we have THREE representatives attending the next US meeting and expect to be able to put together a very good summary of what goes on there. All three people have been told that if they dont take notes, they need not bother returning to Australia.

Merry Christmas And A Happy New Year



Peter Ivanov
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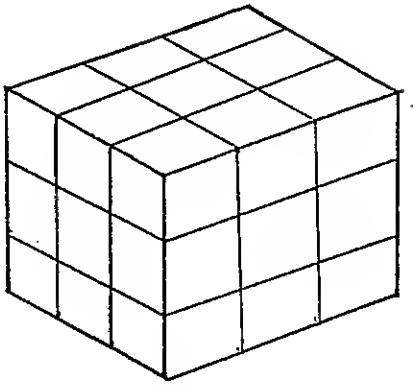
(02) 662-3781

THE HUNGARIAN CUBE

"The" adult toy of 1980 in Australia is Rubik's cube. It is a $3 \times 3 \times 3$ plastic cube which can be twisted about the three principal axes in 6 ways, i.e. all 6 faces can be rotated.

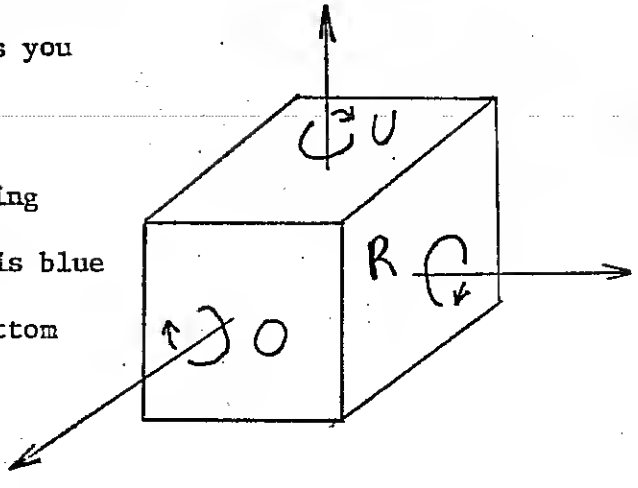


Those who see a cube can be catagorized by their initial response - either they want to "solve" the cube or they want to know how it possibly could have been constructed. I am very much in the first category.

To solve the cube means to take a "randomized" cube and restore it to the situation where each face is one colour. (Question: Why is the cube Hungarian and not Russian? Answer: In Russia all faces would have to be the same colour). The number of different positions the cube can be put in is $\frac{1}{12}(3^8 8!\ 2^{12} 12!), = 4.3252 \ldots \times 10^{19}$. The reason for the 1/12 is not obvious - more about that later but the rest is not too hard to see. If each of the 8 corners could be moved at random there would be $3^8 \times 8!$ arrangements and if the 12 midedges could be moved at random there would be $2^{12} \times 12!$ arrangements.

To actually solve the problem is not too hard provided you know how to do it and here is a method due to John Conway of Cambridge, England.

The method is based on holding the cube in a particular orientation and then defining U, R and O to be the operations of rotating the top, the right hand face and the face that faces you (respectively) clockwise through 90°.

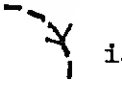


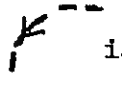
The alogrithm starts by first fixing the bottom face. Traditionally this is blue and do not forget that "fixing" the bottom

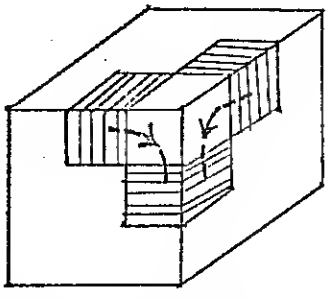
face includes making the bottom row of each side the same colour as the fixed centre square of that side of the cube. If you cannot work out how to do this within a week perhaps you should not be a cube owner?

The next step is to get the 4 mid-edges on the second row correct.

Let $S_1 = URU^{-1}R^{-1}$ and $S_2 = U^{-1}O^{-1}UO$.

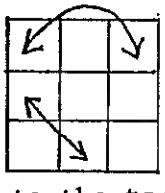
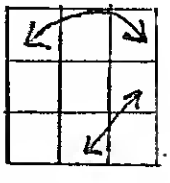

is performed by S_1S_2


is performed by S_2S_1

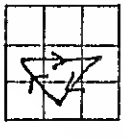
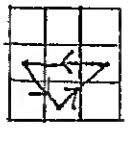


The second row can be completed by a sequence of these moves (taking cubes "out" of the second row if necessary as well).

This leaves the "top" row to be fixed. This is done by first getting the 8 cubes into their correct position and then twisting them, if necessary.

The following sequence $U^2ORU^{-1}R^{-1}U^{-1}R\ UR^{-1}O^{-1}$ does 
to the top and $RUR^{-1}O^{-1}UORU^{-1}R^{-1}U^2$ does 
to the top.

A sequence of these will get the corners right.

Next let α denote the operation of turning the vertical middle third of the cube 90° towards you. Then $\alpha U\alpha^{-1}U^2\alpha U\alpha^{-1}$ does 
to the top. Similarly $\alpha U^{-1}\alpha^{-1}U^2\alpha U^{-1}\alpha^{-1}$ does 
to the top.

At this stage all cubes should be in their right position although some corners may need to be "twisted" (through 120°) and some mid-edges may need to be "flipped". "Twists" and "flips" can only be done in pairs.

To do two twists hold the cube so that both corners which need to be twisted are on the top, with one of them in the front right corner $R^{-1}BROBO^{-1}$ twists this corner "clockwise". Move the other corner to the front right corner by U, U^2 or U^3 and perform $OB^{-1}O^{-1}R^{-1}B^{-1}R$. (B is twisting the "bottom" clockwise through 90°).

Similarly, to do 2 "flips", the "hotseat" is the front top middle cube. Perform $O\varepsilon O^2\varepsilon^2 O$, move the other cube to be flipped to the hotseat and perform $O^{-1}\varepsilon^{-2}O^2\varepsilon^{-1}O^{-1}$. You should now be able to completely solve the cube. (ε is the operation of rotating the 2nd layer 90° to the right as you look at the front).

The twelve (in $1/12(3^8 8!\ 2^{12}12!)$) has now been exhibited. One 2 is the fact that flips come in pairs, the 3 is the fact that twists come in pairs, and the final 2 is the fact that if you swop 2 corners you must swop 2 mid-edges.

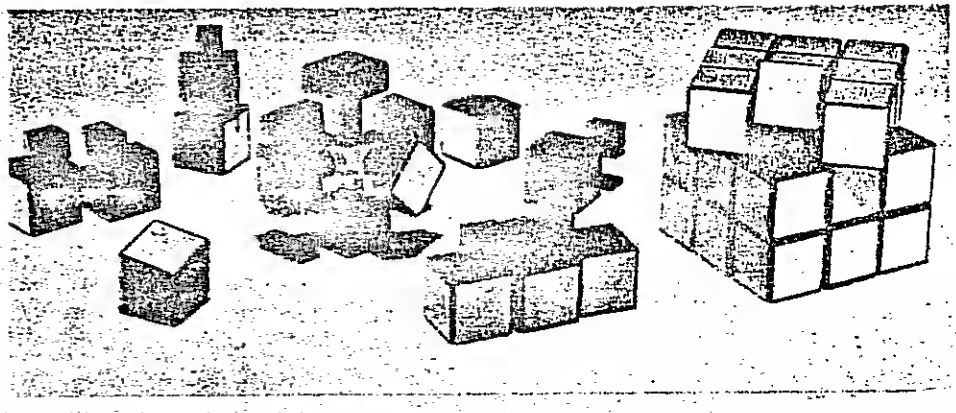
INSIDE RUBIK'S CUBE

Herewith, the inner mechanism of the mathematical toy invented by Hungarian sculptor and architect Ernõ Rubik, described in last month's Games column. A masterpiece of three-dimensional engineering, it comes apart into 20 small subcubes. There are eight corner cubes, each colored on three sides. Squeezed between them are 12 edge cubes, each colored on two sides. The subcubes interlock so that any given corner cube can be held in place by any two of the three edge cubes touching it.

The mechanism holding everything together looks like a child's jack. Each of its six arms terminates in a half-cube showing one of six colors, and each colored on one face only. These half-cubes are in the center of the outside faces when the cube is assembled, and they always stay in the center as the cube's faces are turned, just as corner cubes always stay in the corners and edge cubes always stay on the edges. The center half-cubes are attached to the spindle by spring-loaded screws. The six springs pull the 20 interlocking pieces snug in the assembled cube.

To take Rubik's Cube apart, rotate the top face one-eighth turn—halfway to the next position. An edge piece of the top face can now be twisted upward, as shown (below, right), and then it will come out. If the cube is stiff, a screwdriver may be used. Once one piece is out, the others can be removed more easily.

As we explained last month, if you reassemble the subcubes randomly, the chances are 11 in 12 that you will orient the colors in such a way that it will be impossible to get the cube back to START.



Inner Cube: subcubes around a jacklike spindle (center), how to get inside (

>From ucsfcgl!tef Thu Dec 4 13:27:00 1980
Subject: Next Usenix and Software Tools Meetings
(214 lines)

Announcing:

USENIX Winter '81 Conference

Wednesday, January 21st, 1981
thru
Friday, January 23rd, 1981

and

Software Tools User's Group Meeting
16,30p

Tuesday, January 20th, 1981

The Jack Tar Hotel
San Francisco, CA

Official notice is hereby given of the next national Usenix Conference and Software Tools User's Group Meeting. The two conferences will be a total of 4 days long and will consist of of the following tentative agenda:

Tuesday, Jan 20th 9-5pmSoftware Tools (See below)
6-9pmUsenix registration
Wednesday, Jan 21st 9-11amUsenix registration
10-12noon,1-5pmTechnical presentations
6-8pmConference reception
Thursday, Jan 22nd 9-12noon,1-5pmTechnical presentations
7-10pmVendor exposition & SIG groups
Friday, Jan 23rd 9-12noon,1-5pmTechnical presentations

Usenix registration fees are:
RegularStudent
Pre-registration$30$15
(must be postmarked by
17 Jan 81)

On-site registration$60$30

The Software Tools User's Group will meet on Tuesday, Jan 20th. Session topics will cover the "virtual operating system approach", new & enhanced tools, implementation issues, SIG's on Ratfor, networks, text processing and primitives and future directions (additional details in registration packet). Software Tools registration fees are:
egularStudent
re-registration$10$5
(must be postmarked by17 Jan 81)

n-site registration$20$10

ndividuals interested in either meeting should obtain a registration packet s soon as possible in order to assure a place to stay in San Francisco. egistration material can be obtained from Tom Ferrin (address given elow).

1

A VENDOR EXPOSITION IS PLANNED AT THIS CONFERENCE. BBN WILL HAVE THEIR C-70 "C" MACHINE AND ONYX WILL HAVE ONE OF THEIR UNIX SYSTEMS RUNNING. OTHER INTERESTED VENDORS ARE URGED TO CONTACT TOM FERRIN FOR SPACE ARRANGEMENTS.

TECHNICAL PRESENTATIONS:

ABSTRACTS ARE NOW BEING ACCEPTED FROM INDIVIDUALS WISHING TO MAKE A TECHNICAL PRESENTATION AT THE CONFERENCE. POTENTIAL SPEAKERS MUST SUBMIT AN ABSTRACT (100-200 WORDS), PREFERABLY VIA ELECTRONIC MEANS, TO MIKE O'DELL AT LAWRENCE BERKELEY LABS (SEE BELOW FOR ADDRESS). AN AGENDA WILL BE DISTRIBUTED AT THE MEETING AND ABSTRACTS MUST BE SCREENED IN ADVANCE IN ORDER TO MAKE A PRESENTATION.

POSSIBLE TOPIC AREAS INCLUDE:

VAX -
STATUS REPORTS; WHAT ABOUT THE 750? CONVERSION EFFORTS; PERFORMANCE ISSUES; NETWORKING?

V7 -
STATUS REPORTS; SCALING FOR SMALL SYSTEMS; PERFORMANCE PROBLEMS; CONVERSION ISSUES

NETWORKS -
ARPANET ISSUES FOR VAX AND V7 SYSTEMS;
NETWORKING WITH ALIEN HOSTS (IBM RJE, CDC HYPERCHANNEL, ETC)

MAIL SYSTEMS; EDITORS; TEXT PROCESSING; DOCUMENT COMPILERS; FORMS MANAGEMENT SYSTEMS; "OFFICE INFORMATION SYSTEMS"; HIGH-PERFORMANCE OUTPUT DEVICES; TYPESETTER SIMULATORS; USER EXPERIENCES!!!!

GRAPHICS -
SYSTEMS; IMPLEMENTATIONS (SIGGRAPH CORE); INTEGRATED GRAPHICS AND TEXT FOR DOCUMENT GENERATION; UNIX ARCHITECTURAL ISSUES WHICH EFFECT GRAPHICS SYSTEMS DESIGN

WHAT, WHO, WHERE, WHY. WITHER ADA? NEW C COMPILERS; NEW ANYTHING

ELSE COMPILERS; ALGOL68 ON THE VAX; LISP (FRANZ AND HIS FRIENDS); YAKIMA; SNOBOL SYSTEMS; APL; STATUS REPORTS; EFFORTS ENVISIONED

DATABASE SYSTEMS -
DEMONSTRATION, AND PRODUCTION?

UNIX ON THE VAX; WHAT SHOULD BE CONSIDERED FOR STANDARDS? WHY SHOULD WE BE INTERESTED? POSITION PAPERS; PONTIFICATIONS

HARDWARE -
NEAT NEW HARDWARE FOR C, SMALL UNIX SYSTEMS; LARGE UNIX SYSTEMS; IMPRESSIVE PERIPHERALS; UNIMPRESSIVE PERIPHERALS; USER EXPERIENCES; CONFIGURATION ISSUES; THE THIRD-PARTY MAINTENANCE ALTERNATIVE; "STANDARD" DEVICE DRIVERS?

UNIX AS A SYSTEMS BASE; PERFORMANCE; RELIABILITY; NAME RECOGNITION; BUILDING "REAL-WORLD" APPLICATION IN "NON-COBOL"; WHY IS UNIX GOOD FOR SYSTEM BUILDERS; WHY IS IT BAD? WHO SHOULD CONSIDER IT AND WHO SHOULD KEEP THEIR DISTANCE?

OMMERCIAL PRODUCTS -
RGANIZATIONS WITH COMMERCIAL PRODUCTS BASED ON UNIX ARE ENCOURAGED
O MAKE PRESENTATIONS BASED ON THE FOLLOWING GUIDELINES: SINCE
HIS IS A TECHNICAL MEETING, WE REQUIRE PRESENTATIONS IN THE
ENERAL SESSIONS TO BE OF A TECHNICAL NATURE. THEY SHOULD BE PRESENTED
Y SOMEONE WITH A DEEP TECHNICAL UNDERSTANDING OF THE PRODUCT
ND FREE TO DISCUSS ANY REASONABLE TECHNICAL QUESTIONS HE/SHE RAISES.
N IDEAL PRESENTER WOULD BE A DESIGNER OR IMPLEMENTOR.
HERE WILL BE A SPECIFIC SESSION FOR "SALES" PRESENTATIONS WHERE
EOPLE INTERESTED IN THOSE ASPECTS CAN INTERACT. WE WISH TO

NCOURAGE EXPOSURE TO COMMERCIAL OFFERINGS, BUT AT THE SAME
IME, DESIRE TO RESPECT THE BASICALLY TECHNICAL NATURE OF THE EVENT.

UTURE DIRECTIONS -
HERE ARE WE (THE UNIX WORLD) GOING, WHO IS GOING WITH US, AND
HO IS DOING THE DRIVING? IMPACTS OF UNIX AS A DE FACTO STANDARD
PERATING SYSTEM, VENDOR ACCOMMODATION OF UNIX (I.E., THE MUCH RUMORED
EC C COMPILER), HOW DOES THIS INTERACT WITH THE "STANDARDS" ISSUE?
HAT COMES AFTER UNIX?

HE UNIX MILIEU -
NYTHING NOT MENTIONED OR IMPLIED SOMEWHERE ABOVE. WHAT ARE
OU DOING THAT IS INTERESTING OR MIGHT SAVE SOMEONE ELSE FROM
EINVENTING THE WHEEL?

BSTRACTS MUST CONTAIN THE FOLLOWING INFORMATION:
) FULL HUMAN NAME
) OFFICIAL US MAIL ADDRESS (PROBABLY THE INSTALLATION + ROUTING INFO
EQUIRED TO OUTWIT LOCAL HUMAN MAILERS)
) US MAIL ADDRESS WHICH IS GOOD FOR QUICK RESPONSE IF ELECTRONIC
AIL IS NOT AVAILABLE
) ELECTRONIC MAIL ADDRESS IF AT ALL POSSIBLE
) TELEPHONE NUMBER WHICH WILL GET TO THE PERSON AT THE INSTALLATION, AND
HAT HOURS OF THE DAY IT IS REASONABLE TO ATTEMPT THIS. IF THIS IS
IFFICULT OR IMPOSSIBLE, A PHONE NUMBER TO AN ARBITRARY PLACE, LIKELY
O REACH THE PERSON. AGAIN, LIST THE HOURS WHEN THIS NUMBER APPLIES.
) AUDIO-VISUAL EQUIPMENT REQUIREMENTS. (35MM SLIDE PROJECTOR? OVERHEAD?
6MM FILM? OTHER?)

LARGE EFFORT WILL BE MADE TO NOTIFY ALL PERSONS SELECTED TO MAKE
RESENTATIONS BEFORE THE CONFERENCE DATES. A SCREENING COMMITTEE
OMPOSED OF MIKE O'DELL, BILL JOY AND TOM FERRIN WILL CHOOSE FROM ALL
UBMITTED ABSTRACTS. TALKS ALREADY PRESENTED AT PREVIOUS MEETING(S)
RE DISCOURAGED UNLESS THEY CONTAIN SIGNIFICANT NEW MATERIAL OR AREOF
XCEPTIONAL INTEREST.

3

AILING ADDRESSES:

) TO GET CONFERENCE REGISTRATION MATERIALS CONTACT:

OM FERRIN

CBVAX!UCSFCGL!TEF(VIA UUCP)
SXAV.UCSFCGL!TEF@BERKELEY(VIA ARPANET)
CHOOL OF PHARMAC(VIA UNCLE SAM)
NIVERSITY OF CALIFORNIA
AN FRANCISCO, CA 94143

) TO SUBMIT AN ABSTRACT FOR A POTENTIAL PRESENTATION CONTACT:

IKE O'DELL

CBVAX!MO(VIA UUCP)
O@LBL-UNIX(VIA ARPANET)
AM 508/3243(VIA UNCLE SAM)
AWRENCE BERKELEY LABORATORY
NIVERSITY OF CALIFORNIA
ERKELEY, CA 94720

LECTRONIC MAIL IS PREFERRED; PLEASE, NO PHONE CALLS.

HIS IS PROMISED TO BE A POPULAR CONFERENCE. WE EXPECT AROUND 500
TTENDEES FOR THIS MEETING (BIGGEST TO DATE) AND FACILITIES ARE LIMITED.
LAN TO BEAT THE HOLIDAY RUSH BY GETTING A REGISTRATION PACKET SENT
O YOU AND THEN MAKING BOTH HOTEL RESERVATIONS AND CONFERENCE
RE-REGISTRATIONS EARLY!
01, Ed

OTE:
VERYONE ON THE ;LOGIN: NEWSLETTER SUBSCRIPTION LIST WILL
UTOMATICALLY RECEIVE A REGISTRATION PACKET VIA UNCLE SAM'S
AIL SERVICE. YOU ONLY NEED TO REQUEST THAT A PACKET BE
ENT TO YOU IF YOU ARE NOT ON THIS SUBSCRIPTION LIST.

ANJSAT DEC 13 15:10:03 1980

ATTION

CUUGN.

Contributions

Subject	Author
US UNIX SIG	Bartelt
More UBC Software	Webb
Request for Information	Gayler

Canadian UNIX User's Group

Newsletter

Vol. 1, No. 3 October 1980

From the Editor

Well, this issue is a bit late. Partly this is my fault, but I have had the excuse that nobody has sent me anything to print. So people, SEND ME THINGS TO PRINT. For my part, I will describe the implementation of a low cost UNIX terminal concentrator in the next issue. I do have some news this time, so here it is.

DECUS US UNIX SIG

In this issue you will find some details of the new DECUS US UNIX SIG. They have decided to call it the "Special Software and Operating Systems" SIG, but it's really the UNIX SIG.

USENIX Meeting

The Winter meeting of the USENIX Association will be held in San Francisco, California, January 21-23, 1981. The meeting will be held at the University of California, San Francisco. The meeting organizer is:

Tom Ferrin
Room 1022C, Medical Sciences Bldg.
UCSF
San Francisco, CA 94143
USA

/usr/group

A new group for UNIX users has been formed, called "/usr/group". It intends to be sensitive to the problems of commercial UNIX users, unlike USENIX. Contact:

/usr/group
Post Office Box 8570
Stanford, CA 94305
USA

or call Dennis Allison at 415-325-2962 or Bob McClure at 408-733-6617.

Growth of UNIX

Speaking of commercial UNIX use, a number of new developments indicate that UNIX will be very widely used in the 80's. Bell Labs and Western Electric have a new policy on UNIX sales which allows binary Version 7 licenses to be retailed at a low price. The price of a UNIX license depends on the number of users the system can support (from 1 to 35, 36 and above being unlimited.) The price also varies depending upon the total amount of money that Western Electric has received in royalty payments (i.e. there are ever increasing bulk discounts.) Once a company has sold a large number of systems, it will be in a position to market a single-user UNIX license for no more than the cost of something like CP/M. (This will not occur for a few years yet.) Several companies have entered into this kind of agreement with Western Electric, including Digital Systems House of Batavia, Illinois, and Microsoft, of Bellevue, Washington. Microsoft UNIX distributers are currently Lifeboat Associates of New York City in the US and Human Computing Resources Corporation of Toronto in Canada. Other UNIX suppliers include RLG Associates, Yourdan, Charles River Data, Advanced Digital Design (Saskatoon), The Wollongong Group (on Perkin-Elmer hardware), and, for those of you who are rich, Interactive Systems. You may expect an increasing number of companies to enter into the business, offering UNIX with various levels of commercial support.

Several computer manufacturers are or will be supplying UNIX. Amdahl now supplies UNIX Version 7 to run on the Amdahl/470 (or any Amdahl-compatible processor) under VM. It is priced like IBM software ($3000 per month) and it has been re-named "Universal Timesharing System." Zilog is rumored to be introducing UNIX as one of its standard systems. BBN Computer is finally ready to sell its "C Machine", which also comes with UNIX. Other manufacturers have UNIX running internally and are considering releases.

Along with this, several companies are producing "UNIX look-alikes". Whitesmiths Ltd, of New York, has supposedly begun delivery of its IDRIS system, which looks like UNIX Version 6 (although not all utilities may be available.) Mark Williams Co., of Chicago, is said to be ready to deliver the first version of COHERENT, which is compatible with UNIX Version 7 at the source level. Few details of the quality or completeness of these implementations are currently available. Several microcomputer companies make systems that "resemble" UNIX. Cromemco's CROMIX is an example.

Finally, the UNIX and UNIX look-alike vendors will be supplying UNIX systems for the Z8000, M68000, and 8086 processors. These systems are slated for delivery at various times in 1981, except for the Onyx system, which is available now for the Onyx Z8000 processor.

In order to keep up with this, the DEC Telco support group in New Hampshire is doing extensive work with UNIX. They are making sure that UNIX will run on all new DEC hardware. (Note that I/D space and reasonable memory-management made a comeback on the 11/44.)

Biosciences Data Centre
The University of British Columbia
2204 Main Mall
Vancouver, B.C., Canada V6T 1W5

(604) 228-6527

November 5,1980.

The Editor
Canadian UNIX Users Group
Human Computing Resources Corporation
10 St. Mary Street
Toronto, Ontario

Dear Group:

I thought that I would mention some of the things that I have been doing since I last wrote to you:

System changes: I have changed our system in the following ways that might be of interest to others:

1 I changed ICHECK so that I could tell it about bad blocks. This prevents UNIX from using those blocks, as after an "icheck -s" the bad blocks are taken out of the free list. Warnings are printed if a bad block appears in the filesystem other than the freelist.

2 I have changed DUMP/RESTOR to block the tapes. If no blocking is specified the programs work normally. In fact, a blocked dump tape may be read via an unmodified restor if one unblocks it via dd first (but you need lots of space or two tape drives).

3 I have modified "rm" so that it does the -r recursive directory delete itself rather than using GLOB, this means that one no longer gets the "no match" or "arg list too long" error messages.

4 "rm" also prints out the mode using the same format as "ls" so that it is easier to read. It also uses "/dev/tty" to read the response, so that it works properly from shell files.

5 I have written a program called LONG which can be used together with find to execute commands. For example to print out the status of all directories on the file-system one could use:
find / -type d -a -print ^ long ls -ld

6 I have modified find to use the -lS stdio library so that it no longer does one byte writes to files (ever wonder why find ... ^ cpio takes so long?)

7 we now have a working RM04 equivalent disk and a driver for it is available from us as well. (an RM04/RM05 is a 300 MB RM02/RM03). (ours is a CDC 9766 with a Western Peripherals controller).

8 I have modified RC (ratfor) to work with our Fortran 77.

9 I have modified the shell (Yale version) in several ways: (a) it now invokes /bin/bye upon logout from the top-level shell, which does any cleanup required, and prints a logged off message. It also checks for a .bye file and starts a shell on it for the user's cleanup. (b) it defines $H as home-directory, $B as bin-directory, and $U as user-name (c) upon a "cd" command (with no arguments) it checks to see if a .mail file with non-zero size exists, and if so, prints out "You have mail".

DISTRIBUTION TAPE

I have put together a distribution tape containing almost everything we have done here, including: Fortran 77, Basic, Lisp, NTP, and modifications to standard UNIX utilities such as rm, dump/restor, etc. To obtain it send me:

1 a check for $100

2 a copy of your UNIX agreement (or the appropriate letter from Bell where a sub-licence is concerned).

3 a 9 track tape of at least 1200 feet, stating a preference for either 800 BPI or 1600 BPI

I will send by return mail (or close to it) a copy of our distribution in TAR format (including TAR in case you don't have it). The distribution tape is about 11,000 blocks long (but its blocked so it will fit on a 1200 foot tape).

Sincerely,

W. E. Webb.
Systems Analyst

WEW:wew

(Almost Dr.) Ian Hayes,
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Electrical Engineering,
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Chris Rowles,
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University of Sydney,
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Colin Boswell,
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8th December, 1980.

Peter Ivanov,
AUUGN Editor,
Department of Computer Science,
University of New South Wales,
P.O. Box 1,
Kensington. N.S.W. 2033.

Dear Peter,

About that cattle-dog, as Ford Prefect is among the trainers will there be a driver for the Infinite Improbability Drive, and will VAXes be packaged in giant running shoes?

Here are some fairly random and disconnected thoughts on cattle dogging. I agree with the comment that a general data base ought to be used to that the usual 'software tools' scenario could take place and somebody use the data base in an improbable fashion. It would be good if people in exotic and distant climes (to wit, Queensland) could have the index without all the sources and/or dial-in access to the complete data base at UNSW. As a department which is not into computing for computing's sake we would find the inclusion of some objects other than program sources, to be interesting. For instance, site descriptions (especially if you could also get them from the other user groups) would be handy for finding all the sites with certain hardware or locating all the psychology departments running UNIX.

Ideally a software catalogue would put an end to the re-invention of wheels. However, in an academic environment there will be many programs which are re-invented because they are too specialised and have too restricted interests to be worth entering in the catalogue. This could probably be partially overcome if the names of people using UNIX and their research areas were stored in the catalogue so that people working in similar areas could contact each other. Most departments already publish lists of the research areas of their staff so the local gurus would only have to cull out the UNIX users rather than trying to extract written responses from their users.

I hope the training progresses smoothly.

Yours faithfully,

Ross Gayler.

December 11, 1980

TRAINEE PROGRAMMER

Commencing salary $10,340 p.a.

Trainee programmer position is available within the Faculty of Commerce, University of New South Wales from January 5, 1981 to February 27, 1981. There is a possibility of extension till December 31, 1981.

The Faculty of Commerce is currently equipped with a PDP 11/40 running under UNIX. The faculty requires retrieval of information, namely, records and statistics of students and staff from its current database.

Duties include update programs, database searches, timetable programs, dependent on day to day management requirements. Knowledge of programming languages remains flexible. However since most programs on the database system are written in C and the access programs are in BASIC it would be desirable to know those languages and the UNIX O/S.

Position is available either full-time or part-time; preference will be given to applicants able to work full-time during January and February.

Enquiries to: Dr. V. Lawrence
Faculty of Commerce
662 3680

UNSW
PO Box 1 Kensington

December 11, 1980

PROGRAMMER

Commencing salary $13,927

A programmer position is available with the Faculty of Commerce, University of New South Wales.

The faculty is currently equipped with a PDP 11/40 running under UNIX. In February 1981 a PDP 11/34A will be installed. It is envisaged that a new faculty database will be implemented on the new computer.

The system will be running under UNIX and requires the database to be written in C.

Duties include implementation of database in C; liason with members of staff to determine requirements of database; information retrieval from the current and new database to satisfy management's day to day needs. A knowledge of C language and the UNIX O/S is essential. A university degeee is preferable and the BASIC language is desirable.

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